



Hantavirus Fact Sheet

North Dakota Department of Health

I. Reduction of Rodent Shelter and Food Sources Inside and Outside the Home

Precautions for Inside the Home

- Keep food and water covered and stored in rodent-proof containers.
- Keep pet food covered and stored in rodent-proof containers. Allow pets only enough food for each meal, then store or discard any remaining food. Do not leave excess pet food or water out overnight.
- If storing trash and food waste inside the home, do so in rodent-proof containers, and frequently clean the interiors and exteriors of the containers with soap and water.
- Wash dishes, pans and cooking utensils immediately after use.
- Remove leftover food and clean up all spilled food from cooking and eating areas.
- Do not store empty aluminum cans or other opened containers with food residues inside the home.
- Dispose of trash and garbage on a frequent and regular basis, and pick up or eliminate clutter.
- Keep items such as boxes, clothes and blankets off the floor to prevent rodents from nesting in them.
- Repair water leaks and prevent condensation from forming on cold water pipes by insulating them. Correct any conditions that support the growth of mold, mildew or other fungi in the home.
- Keep exterior doors and windows closed unless protected by tight-fitting screens.
- Use spring-loaded traps in the home. Use a pea-sized amount of chunky peanut butter as bait. Place the trap perpendicular to the baseboard or wall surface, with the end of the trap containing the bait closest to the baseboard or wall. Place traps in areas where rodents might be entering the home. Spring-loaded traps can be painful or even dangerous if they close on fingers; they should be handled with caution, and careful consideration should be given to keep children and pets away from areas where traps are placed.
- Continue trapping for at least one week after the last rodent is caught. As a precaution against reinfestation, use several baited, spring-loaded traps inside the house at all times in locations where rodents are most likely to be found.
- Examine traps regularly. To dispose of traps or trapped animals, wear rubber, latex, vinyl or nitrile gloves. Spray the dead rodent with a disinfectant or chlorine solution. After

soaking the rodent thoroughly, take it out of the trap by lifting the spring-loaded metal bar and letting the animal fall into a plastic bag, or place the entire trap containing the dead rodent into a plastic bag and seal the bag. Then place the rodent into a second plastic bag and seal it. Dispose of the rodent in the double bag by (1) burying it in a 2- to 3-foot-deep hole, (2) burning it or (3) placing it in a covered trash can that is regularly emptied. Contact the local or state health department for other appropriate disposal methods.

- If the trap will be reused, decontaminate it by immersing and washing it in a disinfectant or chlorine solution and rinsing afterward.
- For substantially severe or persistent infestations, contact a pest-control professional for rodent eradication or a building contractor for rodent exclusion (rodent proofing).

Precautions for Outside the Home

- Place woodpiles and stacks of lumber, bricks stones, or other materials more than 100 feet from the house.
- Store grains and animal feed in rodent-proof containers.
- Remove, from the vicinity of buildings, any food sources that might attract rodents.
- Keep pet food covered and stored in rodent-proof containers. Allow outside pets only enough food for each meal, then store or discard any remaining food from feeding dishes.
- Avoid using bird feeders near the home. If they must be placed near the home, use squirrel-proof feeders, and clean up spilled seeds each evening.
- Dispose of garbage and trash in rodent-proof containers with tight-fitting lids.
- Haul away trash, abandoned vehicles, discarded tires and other items that might serve as rodent nesting sites.
- Mow grass closely, and cut or remove brush and dense shrubbery to a distance of at least 100 feet from the home. Trim the limbs off any trees or shrubs that overhang or touch the building.
- Use raised cement foundations in new construction of sheds, barns and outbuildings.
- Place spring-loaded traps in outbuildings (regardless of their distance from the home) and in areas that might likely serve as rodent shelter within 100 feet around the home; use these traps continuously, replacing the bait periodically. For instructions about the safe use and cleaning of spring-loaded traps and the disposal of trapped rodents, see previous section: Precautions for Inside the Home.

II. Preventing Rodents From Entering the Home by Rodent-Proofing

- Look for and seal all gaps and holes inside and outside the home that are more than ¼ inch (6 mm) in diameter. Inside the home, look for and seal all gaps and holes underneath, behind and inside kitchen cabinets; inside closets; around floor air vents and dryer vents; around the fireplace; around windows and doors; behind appliances such as

dishwashers and washing machines; around pipes under the kitchen and bathroom sinks; around all electrical, water, gas and sewer lines (chases); and beneath or behind hot water heaters, radiators and furnaces and around their pipes that enter the home.

Outside the home, look for and seal all gaps and holes around windows and doors; between the foundation of the home and the ground; under doors without that don't have weather stripping; around electrical, water, gas and sewer lines (chases); and around the roof, eaves, gables and soffits. In addition, look for unscreened attic vents and crawlspace vents. In trailers, look for and seal holes and gaps in the skirting; between the trim and metal siding; and around utility lines, pipes, ducts, roof vents and the trailer tongue.

- Seal all entry holes more than ¼ inch (6 mm) in diameter inside and outside the home with any of the following: cement, lath screen or lath metal, wire screening, hardware cloth (less than ¼-inch grate size), or other patching materials. Steel wool or STUF-FIT also can be used, but caulk must be placed around the steel wool or STUF-FIT to prevent rodents from pushing it through the hole. Caulk and expanding foam can be used to reinforce any repairs where lath metal, hardware cloth, steel wool or STUF-FIT are the primary materials; however, caulk or expanding foam alone are usually not sufficient to prevent rodent intrusion.
- If rodent burrows are found under foundations or trailer skirtings, construct a barrier around the entire foundation using 14-inch wide (35 cm), less than ¼-inch (6 mm) mesh, or 16- to 19-gauge hardware cloth. Bend the hardware cloth lengthwise into a right angle with two sides of about 7 inches (18 cm) in length. Secure one side of the hardware cloth tightly to the building siding. The other side should be buried at least 2 inches (5 cm) below ground level and should extend away from the wall.
- Consult a pest-control professional for severe or persistent infestations.

III. Cleanup of Rodent Urine and Droppings and Contaminated Surfaces

- During cleaning, wear rubber, latex, vinyl or nitrile gloves.
- Spray rodent urine and droppings with a disinfectant or chlorine solution until thoroughly soaked. (See following section: Cleanup of Dead Rodents and Rodent Nests.)
- To avoid generating potentially infectious aerosols, do not vacuum or sweep rodent urine, droppings or contaminated surfaces until they have been disinfected.
- Use a paper towel to pick up the urine and droppings. Place the paper towel in the garbage.
- After the rodent droppings and urine have been removed, disinfect items that might have been contaminated by rodents or their urine and droppings.
 - Mop floors with a disinfectant or chlorine solution.
 - Disinfect countertops, cabinets, drawers and other durable surfaces with a disinfectant or chlorine solution.

- Spray dirt floors with a disinfectant or chlorine solution.
- Disinfect carpets with a disinfectant or with a commercial-grade steam cleaner or shampoo.
- Steam-clean or shampoo rugs and upholstered furniture.
- Launder potentially contaminated bedding and clothing with hot water and detergent. Use rubber, latex, vinyl or nitrile gloves when handling contaminated laundry. Machine-dry laundry on a high setting or hang it in the sun to air dry.
- If books, papers and other items cannot be cleaned with a liquid disinfectant or thrown away, leave them outdoors in the sunlight for several hours or in an indoor area free of rodents for about one week. After that time, the virus should no longer be infectious. Wear rubber, latex, vinyl or nitrile gloves, and wipe the items with a cloth moistened with disinfectant.
- Before removing gloves, clean them with disinfectant or soap and water. After removing the clean gloves, thoroughly wash bare hands with soap and warm water.

IV. Cleanup of Dead Rodents and Rodent Nests

- Wear rubber, latex, vinyl or nitrile gloves.
- In the western United States, use insect repellent (containing DEET) on clothing, shoes and hands to reduce the risk of fleabites that might transmit plague.
- Spray dead rodents and rodent nests with a disinfectant or a chlorine solution, soaking them thoroughly.
- Place the dead rodent or nest in a plastic bag or remove the dead rodent from the trap and place it in a plastic bag (See Precautions for Inside the Home.) When cleanup is complete (or when the bag is full), seal the bag, place it into a second plastic bag and seal the second bag. Dispose of the material in the double bag by (1) burying it in a hole that is 2- to 3-feet deep, (2) burning it or (3) discarding it in a covered trash can that is emptied regularly. Contact the local or state health department concerning other appropriate disposal methods.
- Clean up the surrounding area as described in Cleanup of Rodent Urine and Droppings and Contaminated Surfaces.

V. Disinfecting Solutions

Two types of disinfecting solutions are recommended to clean up rodent materials:

- 1) General-Purpose Household Disinfectant. Prepare according to label directions. Almost any agent commercially available in the United States is sufficient as long as the label states that it is a disinfectant. Effective agents include those based on phenols, quaternary ammonium compounds and hypochlorite.

- 2) Hypochlorite Solution. A chlorine solution, freshly prepared by mixing 1½ cups of household bleach in one gallon of water (or a 1:10 solution) can be used in place of a commercial disinfectant. When using chlorine solution, avoid spilling the mixture on clothing or other items that might be damaged by bleach. Wear rubber, latex, vinyl or nitrile gloves when preparing and using chlorine solutions. Chlorine solutions should be prepared fresh daily.

VI. Cleaning Sheds and Other Outbuildings

Before cleaning closed sheds and other outbuildings, ventilate the building by opening doors and windows for at least 30 minutes. Use cross ventilation if possible. Leave the area during the airing-out period. This airing helps to remove infectious primary aerosols that might be created when hantavirus-infected rodents urinate. In very dirty or dusty environments, additional protective clothing or equipment such as coveralls (disposable when possible) and safety glasses or goggles, may be worn, in addition to rubber, latex, vinyl or nitrile gloves. For recommendations regarding precautions for cleanup of outbuildings with heavy rodent infestations, call your local or state health department.

For more information, call the North Dakota Department of Health at 701.328.2378 or 800.472.2180.